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Phytochemistry & nutritional composition of *Hibiscus rosa sinensis*

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Abstract
The usual plant products are broadly used at the present time because of increasing the problem of diseases. *Hibiscus rosa sinensis* Linn. (Family Malvaceae) is a plant which is widely spread throughout the world. Complete tree i.e. its leaves, barks, roots and flowers have been used in the Indian traditional system as remedy to treat various diseases. The medicinal value of the flower is described in the ancient science, Ayurveda and Chinese herbology A number of research studies proved that the different parts of *Hibiscus rosa sinensis* plants possesses Antioxidant, Antimicrobial, Antidiabetic, Antiulcer, Hepatoprotective, Antifertility, Antigenotoxic and Anti-inflammatory properties, which supports in treatment of countless diseases. Hibiscus rosa sinensis has been used in many herbal mix and drinks. This review endeavour to highlight the therapeutic application of *Hibiscus rosa sinensis.*

Keywords: *Hibiscus rosa sinensis*, medicinal uses, phytochemicals, therapeutic potential

Introduction
Since the Vedic era in India medicinal plants have been helpful to humans. They are constantly used by man for his well-being due to their remarkable biological and pharmacological uses. One such plant is Hibiscus Rosa sinensis, which belongs to the Malvaceae family. It is a tropical Hibiscus species from to the Hibisceae family. Medicinal plants have been utilised for a variety of reasons throughout history. Because of their capacity to manufacture chemical compounds that help to prevent illnesses like cancer and diabetes, the plants have been classified as medicinal plants. A vast range of chemical compounds serve vital biological roles, including defence against predators including fungus, insects, and herbivorous animals. So date, at least 12,000 such compounds have been discovered, accounting for less than 10% of the total (Tapsell *et al* [1]; Lai and Roy) [2].

Fig 1: Hebiscus rosa sinesis [China rose]

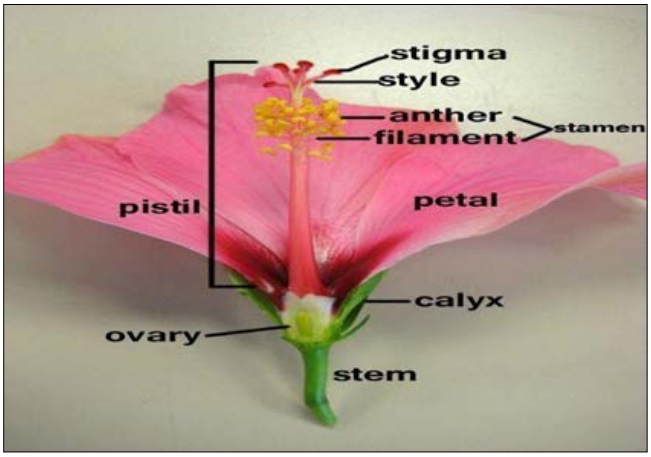


Fig 2: Parts of Flower

Medicinal plants can be measured and separated in three imperative areas: (a) modern medicines that utilize about 30 to 35 medicinal plants; (b) systematized and classified traditional medicines that are with written discourse texts such as Ayurveda, Siddha, Unani, Amchi and Tibetan systems of medicine that use about 1,200 to 2,000 medicinal plant species, and (c) Local health traditions that are based on villagers', folk healers', vaidyas', and tribal people's usage of more than 8,000 kinds of medicinal plants for basic health care. (Dahanukar *et al*) [3].

Hibiscus rosa sinensis L. (Malvaceae) is a Chinese flowering plant. Hibiscus are grown for their beautiful blossoms in a variety of types. It's a tropical shrub with a variety of bloom colours that's frequently grown as an attractive plant in the tropics. Hibiscus is also used as a major component in many herbal teas because of its therapeutic qualities. In medicine, the red flowered type is favoured. The taxonomy and the name of Hibiscus flowers in different region were depicted in underneath of paragraph. Various research have shown that different types

of Hibiscus plants have distinct therapeutic qualities. The medicinal potential of *Hibiscus rosa sinensis* and its uses were the subject of this review.

Taxonomical classification

Table 1

Kingdom	Plantae
Subkingdom	Tracheobionta
Super Division	Magnoliophyta
division	Magnoliophyta
Class	Magnoliopsida
Subclass	Dilleniidae
Order	Malvales
Family	Malvaceae
Genus	Hibiscus
Species	Rosa-sinensis

Common name of *Hibiscus rosa sinensis*

Table 2

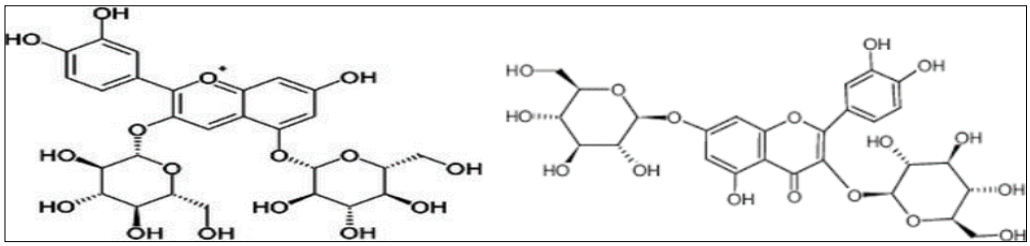
Common name in India	
Andhra Pradesh	Dusanna
Assamese	Jiwa, Joba
Bengali	Oru
Gujarati	Jasvua, Jasunt
Hindi	Guthur, Jassoon, Jasum, Jasund, Jasut, Java, Odhul
Malayalam	Dasavala
Kannasa	Dasavala
Manipuri	Jabakusum
Marathi	Dasindachaphula, Jasvand, Jasund
Mizoram	China Pangpar, Midumpangpar

Description & Geographical Distribution

Annual and perennial herbaceous plants, woody shrubs, and small trees all belong to the genus Hibiscus. Simple, oblong to lanceolate leaves with a lobed or serrated border are the most common. The blooms are usually large, noticeable, trumpet-shaped, and have five or more petals. They are multi-coloured flowers that range in colour from white to purple, red, pink, and yellow. The petals are wide, ranging from 4 to 15cm in length. Nectarines are glandular hairs comprised of many densely packed glandular hairs that are found on the sepals of flowers. The fruit is a five-lobed *capsule with five dry lobes. It comprises numerous seeds in* each of its lobes, which then are released at the time of maturing, when the capsule splitting open (Alarcon [4]; Ames) [5]. Hibiscus plants are a source of beneficial ecological, aesthetic, culinary and medicinal values. Hibiscus has an uncertain origin and historical distribution. There are over 200 species of Hibiscus in the genus Hibiscus, which may be found in tropical and subtropical areas. Hibiscus is a popular garden decorative that may be grown everywhere from sea level to 500 metres above sea level. It is frost sensitive and will freeze in mild winters, but will spring back to life from the root.

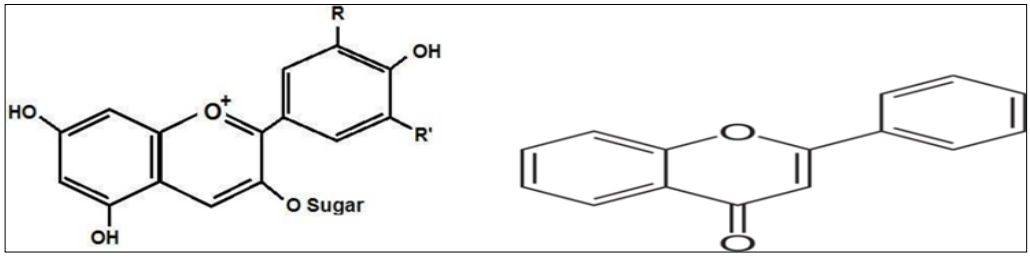
Phytochemistry

The plant *Hibiscus rosa sinensis* has been widely examined. Tannins, Flavonoids, Steroids, Alkaloids, Saponins, Total Phenols, Total Proanthocyanidin, and Total Flavonoids, according to the study. It has been also stated that it comprises majorly Anthocyanins and flavonoids; quercetin-3, 7-diglucoside, quercetin-3-diglucoside, cyanidin-3, 5-diglucoside, cyanidin-3-sophoroside-5-glucoside, the further compounds are also existent like cyclopeptide alkaloid (Khokhar and Ahmad) [6], cyanidin chloride, quercetin, hentriacontane (Jadhav *et al*) [7] and vitamins: riboflavin, ascorbic acid and thiamine. β-sitosterol, stigmasterol, taraxeryl acetate, and three cyclopropane chemicals and their derivatives are found in the leaves and stems. Cyanidin diglucoside, flavonoids, vitamins, thiamine, riboflavin, niacin, and ascorbic acid are all found in Hibiscus flowers. Many potentially beneficial antioxidants and anticancer components are found in H. rosa sinensis extract, including quercetin, glycosides, riboflavin, niacin, carotene, malvalic acid, gentisic acid, margaric acid, and lauric acid. (Hemens *et al* [8]; Weisburger [9]; Block *et al* [10]; Makita *et al* [11]; Ross [12]; Woutersen *et al*) [13]. The phytocompounds of an ethanolic extract of H. rosa sinensis flowers were also investigate by (Bhaskar *et al*) [14]. Sterols, sugars and glycosides, phenolic compounds and tannins, triterpenoids, saponins, mucilage, and flavonoids are all found in the roots of H. sinensis. (Kumari *et al*) [15].



Cyanidin 3, 5-diglucoside, Quercetin-3, 7-diglucoside

Fig 3



Anthocyanin *Flavonoids*

Fig 4

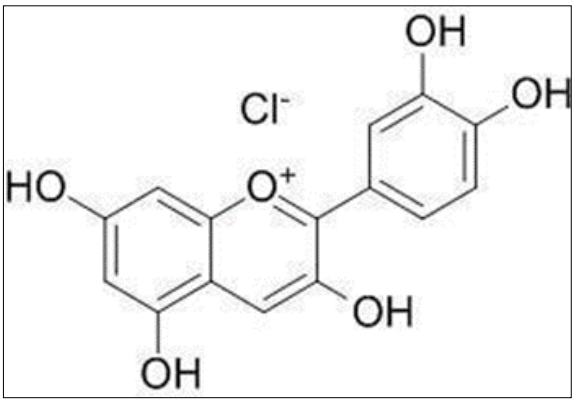


Fig 5: *Cyaniding chloride*

Nutritional Composition

Tables show the nutritional value of *Hibiscus rosa sinensis* flowers and leaves.

Table 3: Hibiscus flower nutritional content based on fresh weight (Yashaswini *et al*) [16]

Major components		Minerals		Vitamin	
Water	89.8%	Calcium	4mg*	Thiamine(B1)	0.03mg*
Protein	0.06g*	Phosphorus	27mg	Riboflavin(B2)	0.05mg
Fat	0.4g	Iron	1.7	Niacin	0.6mg
Fiber	1.56g			Ascorbic acid	4.2mg

Table 4: Hibiscus flowers nutritional content based on a dry weight (water 0%) (Yashaswini *et al*) [16]

Major components		Minerals		Vitamins	
Protein	3.9g	Calcium	39mg*	Thiamine(B1)	0.29mg*
Fat	3.9g	Phosphorus	265mg	Riboflavin(B2)	0.49mg
Carbohydrate	86.3g	Iron	1.7mg	Niacin	5.9mg
Fiber	15.7g	Ash	5.9mg	Ascorbic acid	3.9mg

Table 5: Hibiscus leaves Nutritional composition based on dry weight bases (water 0%) (Yashaswini *et al*) [16]

Fat	3.5g*	Calcium	1670mg*
Carbohydrate	69.7g	Phosphorus	520mg
Fiber	15.5g	Ash	11.4mg

*figures in Tables 3-5 in grams (g) or Milligrams (mg) per 100g of foods.

Traditional Uses

Medicinal plants are regarded as rich resources of traditional medicines and from these plants many of the modern medicines are produced. For thousands of years medicinal plants have been used to treat health disorders, to add flavor and conserve food and to prevent diseases epidemics. Medicinal plants have been playing an essential role in the development of human culture. Herbal medicines are becoming popular day by day as Herbal drugs are safe, cheaper and easily available with therapeutic properties (Sohani) [17]. For ages, *Hibiscus Rosa sinensis* has been utilised in Siddha treatment, an ancient Tamil medical system from South India. Hibiscus extracts have long been utilised in Ayurveda to treat a variety of illnesses. Plants offer natural health benefits that can be utilised to organically cure illnesses. They're also used to treat things like coughs, colds, hair loss, and greying. This plant's flowers and leaves are important in hair care. These are crushed into a fine paste and mixed with water to make a shampoo and conditioner. The herb also aids in the improvement of hair texture and health. Hibiscus is a sweet and sour plant that is used to make herbal drinks. These are crushed into a fine paste and mixed with water to make a shampoo and conditioner.

Hibiscus flowers and leaves are used in India for abortion, antifertility, contraception, diuretic, menorrhagia, bronchitis, emmenagogue, demulcent, cough, and other ailments. (Jadhav *et al*) [18]. Hibiscus blossoms have long been used in sachets and fragrances throughout Africa and other tropical nations. Hibiscus has traditionally been used to alleviate constipation in Northern Nigeria. The fleshy red calyx is used to make jam, jellies, as well as cold and warm teas and beverages. The leaves were prepared in the same way as spinach. The leaves are used in traditional medicines as emollients and aperients to treat burning sensations, skin disease, and constipation (Kirtikar and Basu) [19]. The herb is used in Egypt to treat heart and neurological disorders and is classified as a diuretic. Hibiscus leaves are utilised as an antidiarrheal in Japan. In Iran, sour tea is used to alleviate hypertension. Hibiscus blooms have long been utilised in sachets and perfumes in Western countries, as well as in Africa and other tropical countries.

Discussion

India has diversity of aromatic and medicinal plants. Herbal plants will provide a significant amount of raw material for drug industry to use in the production of medicines. In addition to the need for medicinal plant protection, it has become essential to preserve and patent conventional expertise (Sohani) [20]. Various medicinal plants are being utilised to cure a variety of illnesses. *Hibiscus rosa sinensis* is a flowering plant that may be found all across India. The *Hibiscus rosa sinensis* plant is said to be beneficial for a variety of ailments, including diabetes, inflammation, and hepatic illness. Hibiscus flower and leaf extracts have been shown to have antibacterial properties against a variety of harmful bacteria, reducing the risk of infectious illnesses. Diabetes is becoming more common by the day all around the world. Medicinal herbs have been shown in several trials to lower the risk of diabetes. *In vitro*, hibiscus leaf extract also exhibited anti-tumor efficacy. Ulcer is a gastrointestinal disease characterised by an inflammatory rupture in the skin or mucus membrane that lines the gastrointestinal system. Ulcers can be caused by a variety of factors, including irregular eating habits, stress, and drug usage on a frequent basis. Ulcers are treated using a variety of medicinal herbs. The immune responses for *In vitro*, hibiscus leaf extract also exhibited anti-tumor efficacy. Ulcers can be caused by a number of things, including irregular eating habits, stress, and frequent drug use. A number of medicinal plants are used to cure ulcers. Diseases have been regulated by the immune system's aetiology as well as pathophysiologic mechanisms. The Hibiscus plant is also in charge of this immune system.

Conclusion

For their health treatment, the majority of the populace seeks for medicines produced from plants. Several components produced from medicinal plants are utilised in therapeutic applications, either directly or indirectly. Thus *Rosa sinensis* is a powerful medicinal plant that is verified to have many valuable properties. Due to its numerous applications, hibiscus and its oil have a wide scope for forthcoming research especially in the field of many braches of Sciences.

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